

Application No. 10/532,685
AMENDMENT dated Monday, December 22, 2008
Reply to Office Action of August 21, 2008

REMARKS

Applicants respectfully request favorable reconsideration and then an allowance.

After entry of the present amendment, claims 1-7 and 9-25 are pending.

Allowability of claim 6 is acknowledged with appreciation.

Claims 2, 11-13, and 15-21 stand withdrawn.

Claim 8 was canceled previously.

Applicants respectfully submit Claims 1, 3-4, 9-10, and 14 define novel, unobvious inventions over US 2004/0266939 A1 ("Chen") "as applied to the claims above, and further in view of Mitsubishi '930 or Mitsubishi '739" (Office Action, page 2. It is not certain what was intended with 'as applied to the claims above' and Applicants assume the Examiner meant Chen in view of either Mitsubishi '930 or Mitsubishi '739.

Applicants submit Chen would not have suggested a carbon nanotube doped with an electrically conducting polymer as in their claim 1. Applicants have endeavored to review Chen as discussed in the Office Action, which cited Chen at paragraphs 15 and 19 and Chen's claims 27 and 28. Chen at paragraph 15 does not describe, nor would it have led to, suggested, taught, motivated, or guided a person of ordinary skill in the art to a conducting polymer having an acidic group (a) in combination with water or a water-containing organic solvent (b) and carbon nanotube(s) (c). Instead in paragraph 16, Chen prefers rigid functional conjugated polymers such as poly(arylenethynylene) and poly(3-decylthiophene). The Office Action apparently refers to Chen's paragraph 19, but it too does not describe, nor would it have led to, suggested, taught, motivated, or guided a person of ordinary skill in the art to the subject matter as defined in Applicants' claim 1.

The Office Action cites Chen's claim 27, presumably because it mentions water within a huge Markush group. However, Chen's claim 27 depends from Chen's claim 21, and when viewed in context, neither Chen's claim 21 nor claim 27 describe, would have led to, suggested, taught, motivated, or guided a person of ordinary skill in the art to the subject

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matter as defined in Applicants' claim 1. There does not appear, for example, to be any mention of Applicants component (a), among other things.

The Office Action cites Chen's claim 58, but Applicants again respectfully point out that Chen does not describe, nor would it have led to, suggested, taught, motivated, or guided a person of ordinary skill in the art to a conducting polymer having an acidic group (a) in combination with water or a water-containing organic solvent (b) and carbon nanotube(s) (c). Chen's claim 58 refers to a polymer with a polypyrrole backbone, but nowhere does Chen suggest the polymer is conducting. Besides, Applicants' claim 1 additionally recites a water-soluble conducting polymer having acidic acid groups, which would seem distinct from a polypyrrole polymer in that as disclosed in Chen such a polymer would not have been functionalized as in Applicants' claimed invention.

Indeed, Chen discloses functionalized with "functional extensions" in paragraph [0040], [0041], and [0042]. None appear to be conducting polymers with acidic group(s).

Further to the Office Action's reliance on Chen's claim 58, it is suggested such reliance is misplaced for still further reasons. Claim 58 may, for only the sake of argument, refer to a process for producing a product by mixing a polymer with nanotubes in a solvent. The polymers recited in claim 58 have a polyethylene arylene, polyphenylene arylene, a poly(3-decylthiophene) or a polypyrrole backbone portion. Consequently, when they are in a solvent, they are in a dedoped condition. They do not have conductivity. Therefore, when the polymer is mixed with a carbon nanotube(s) in a solvent, the polymer having no conductivity adheres on the surface of the carbon nanotube(s). The latter cannot exert any inherent conductivity. In contrast, when the polymer is doped, the doped polymer does not dissolve in the solvent. Therefore, it would seem implausible, if not impossible, that one might obtain a coated film in which the carbon nanotube(s) is uniformly dispersed.

In the last mentioned regard, Applicants point out that in the present claimed inventions the water-soluble conducting polymer has an acidic group that functions as a dopant. The acidic group improves solubility of the carbon nanotube(s) in water or in a water-

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containing solvent, while also functioning as a dopant. Therefore, in the claimed invention the polymer having an acidic group has conductivity when in solution. Consequently, when the water-soluble conducting polymer having an acidic group is contacted with the carbon nanotubes in water or a water-containing organic solvent, the carbon nanotubes can be dispersed or dissolved therein.

Neither Mitsubishi '739 nor Mitsubishi '930 disclose water-soluble conducting polymers. These patent publications do not appear to disclose nor would they have led to or suggested the combination of the water-soluble conducting polymer and carbon nanotube(s), or the results/effects obtainable in accordance with the present invention. Mitsubishi '739 and Mitsubishi '930 fail to recognize the problem caused by combining carbon nanotubes and a water-soluble conducting polymer; as a result, the proposed combination fails to disclose or suggest the specific carbon nanotube composition. Furthermore, improvement of the conductivity of the water soluble polymer is not disclosed. As, Mitsubishi '739 and Mitsubishi '930, neither alone nor in combination teach nor suggest the above described specific conducting polymer, the Applicant believes that the present invention is not obvious in view of these references.

Applicants courteously solicit reconsideration as well of the rationale urged in the Office Action, page 3. Applicants are concerned that the rationale conflates obviousness with enablement even though they are two different statutory requirements. In addition, it is not clear that the subject matters of Chen, Mitsubishi '739 and Mitsubishi '930 are really related, and despite the Office Action the latter two references are certainly not for the same purpose as Chen.¹

Lastly, Applicants respectfully request the Examiner to reconsider and withdraw reliance on Chen and Chen's claims 27 and 58 because reliance on the claims for an obviousness rejection seems misplaced. Applicants courteously invite the Examiner's

¹ Applicants request an Examiner's Affidavit to supply the factual support for Office Action, page 3.

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attention to *In re Benno*, 226 USPQ 683 (Fed. Cir. 1985), where the Federal Circuit reversed rejections, explaining:

The board, nevertheless, reached the opposite conclusion by what we consider to be a plainly indefensible line of reasoning. Danti's claim 1, the board said, "is broad enough to read on a package with the inner web encircling the containers in a horizontal direction and the outer web encircling the containers in a vertical direction. . . ." That is appellant's claimed invention, in major part. Therefore, reasoned the board, that configuration would have been obvious from Danti, which is a non sequitur.

Samuel F. B. Morse, the inventor of the telegraph, had a patent thereon, issued in 1840, containing a claim (which the Supreme Court held invalid) which was broad enough to read on the modern Telex. See *O'Reilly v. Morse*, 56 U.S. 62, 112 (1853). By the board's reasoning, Morse's telegraph patent therefore would have made the Telex obvious. The scope of a patent's claims determines what infringes the patent; it is no measure of what it discloses. A patent discloses only that which it describes, whether specifically or in general terms, so as to convey intelligence to one capable of understanding. While it is true, as the Solicitor suggested at oral argument, that "a claim is part of the disclosure," that point is of significance principally in the situation where a patent application as filed contains a claim which specifically discloses something not disclosed in the descriptive part of the specification (claims being technically part of the "specification," 35 USC 112, 2d par.), in which case the applicant may amend the specification without being charged with adding "new matter," within the meaning of §132. See 37 CFR 1.118. ("All amendments to the specification, including the claims, and the drawings filed after the filing date of the application must conform to at least one of them as it was at the time of filing the application." (Emphasis ours.)) But that is not the situation here. Danti's claim 1 does not disclose any structure additional to what the Danti specification discloses.

For the above reasons, we hold that the board erred in relying on Danti's claim 1 in deciding that appellant's claims would have been obvious from that reference alone and also in reaching that conclusion.

In re Benno, 226 USPQ at 686-687 (footnotes omitted, emphasis added).

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Applicants respectfully traverse the rejection of claims 1, 3-5, 9-10, 14, and 22-25 under 35 U.S.C. § 103(a) as being unpatentable over US 2003/0122111 A1 ("Glatkowski") and further in view of Mitsubishi '930 or Mitsubishi '739.

The Glatkowski reference discloses a composition containing a polymer, carbon nanotubes, and a solvent. In addition, claim 15 mentions conducting polymers. However, there are no embodiments in the Glatkowski reference of the conducting polymers. While Glatkowski does refer to a polyimide in paragraph [0048], this does not describe the conducting polymer in the Applicant's claims. In addition, there is no teaching as to the dispersibility of the carbon nanotubes. Still more, there are no descriptions about the water-soluble conducting polymer having an acidic group. In contrast to the teaching of the Glatkowski reference, the present invention achieves both excellent solubility or dispersibility and excellent conductivity of the carbon nanotubes by using the specific water-soluble conducting polymer.

As explained above, the Mitsubishi '739 and Mitsubishi '930 references fail to recognize the problem caused by combining carbon nanotubes and a water-soluble conducting polymer; as a result, the proposed combination fails to disclose or suggest the specific carbon nanotube composition. Furthermore, improvement of the conductivity of the water soluble polymer is not disclosed. As the Glatkowski, Mitsubishi '739, and Mitsubishi '930 references, neither alone nor in combination teach nor suggest the above described specific conducting polymer, the Applicant believes that the present invention is not obvious in view of these references.

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Applicants respectfully traverse the rejection of claims 1, 3-4, 9-10, 14, and 22-25 under 35 U.S.C. § 103(a) as being unpatentable over WO 03/013199 A1 ("Eikos") "as applied to the claims above, and further in view of Mitsubishi '930 or Mitsubishi '739" (Office Action, page 5).

The Eikos reference discloses a conformal coating for EMI shielding comprising an insulating layer and a conducting layer, wherein the conducting layer contains a conducting polymer (claim 13). However, there are no embodiments such as examples in which conducting polymer used. In addition, Eikos does not disclose the specific conducting polymer used in the present invention. Furthermore, there is no teaching as to dispersibility of the carbon nanotubes. Still more, there are no descriptions about the water-soluble conducting polymer having an acidic group. The present invention achieves both excellent solubility or dispersibility and excellent conductivity of the carbon nanotubes by using the specific water-soluble conducting polymer.

As explained above, the Mitsubishi '739 and Mitsubishi '930 references fail to recognize the problem caused by combining carbon nanotubes and a water-soluble conducting polymer; as a result, the proposed combination fails to disclose or suggest the specific carbon nanotube composition. Furthermore, improvement of the conductivity of the water soluble polymer is not disclosed. As the Eikos, Mitsubishi '739, and Mitsubishi '930 references, neither alone nor in combination teach nor suggest the above described specific conducting polymer, the Applicant believes that the present invention is not obvious in view of these references. Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Glatkowski, Eikos, Blanchet-Fincher, or Chen in view of Mitsubishi '930 or Mitsubishi '739 as applied to claim 1 and further in view of Eikos and Search Report (Nguyen). Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Glatkowski, Eikos, Blanchet-Fincher, or Chen in view of Mitsubishi '930 or Mitsubishi '739 as applied to claim 1, and further in view of

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US 2004/0206942 A1 ("Hsu"). Applicant respectfully requests reconsideration and allowance in view of the amendments and discussion presented herein.

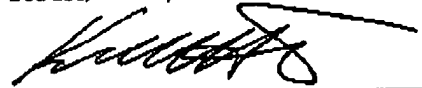
Applicants respectfully traverse the rejection of Claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Glatkowski, Eikos, or Chen in view of Mitsubishi '930 or Mitsubishi '739 as applied to claim 1, and further in view of Hsu. The Hsu reference, as cited in the Office Action, neither teaches nor suggests the use of colloidal silica. Furthermore, the Hsu reference does not speak to the use of colloidal silica regarding its application for the improvement of surface hardness and weather resistance of the present invention. In any event, even in the event that the above references were combined, they would not have taught the presently claimed invention to a person of ordinary skill in the art.

Conclusion

Applicant respectfully requests entry of the present amendment, reconsideration and withdrawal of the rejections to claims 1, 3-7, 9-10, 14 and 22-25, and this application passed to allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 06-1135, regarding our order number 7412/84326.

Respectfully submitted,
FITCH, EVEN, TABIN & FLANNERY



Kendrew H. Colton
Registration No. 30,368
Telephone (202) 419-7000
Facsimile (202) 419-7007

Dated: December 22, 2008
(Monday)

Fitch Even Tabin & Flannery
One Lafayette Centre
1120 20th St. NW - Suite 750 South
Washington, D.C. 20036

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Amendment for SN 10/S 32, 685 (Docket
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